Pinnacle Wireless

800 Marshall Phelps Rd
Building 2A
Windsor, CT 06095

October 21, 2014

Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **EM-CING-111-130501** – New Cingular Wireless PCS, LLC notification of completion of construction at 171 Town Hall Road, Plymouth, Connecticut.

Dear Ms. Bachman:

This letter is submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"), whose notice of intent to modify an existing telecommunications facility was acknowledged by the Connecticut Siting Council ("Council") on May 17, 2013.

Please accept this letter as notification of completion of construction by AT&T as required as a condition of the Council's acknowledgement.

Respectfully Yours,

Cecilia Post
Project Coordinator

Cc: Kevin Mason, AT&T

Fontaine, Lisa

From: Bachman, Melanie
Sent: Monday, July 29, 2013 8:38 AM
To: 'Margus Laan'; CSC-DL Siting Council
Cc: dbertnagel@aol.com; David Bertnagel; 'mjhowlett@optonline.net'
Subject: RE: EM-SPRINT-111-130712

Good morning, Mr. Laan.

The Connecticut Siting Council (Council) is in receipt of your correspondence regarding the Sprint exempt modifications to the existing telecommunications tower located at 171 Town Hill Road in Plymouth. As described in the request, Sprint intends to remove 6 existing antennas and add 3 dual band antennas and 6 remote radio heads behind the antennas. The Council acknowledged this exempt modification on July 26, 2013. Once the acknowledgment letter is received by Sprint, prior to performing the installation, Sprint will apply to the town for a building permit. On this response, I have copied Ms. Melanie Howlett, representative for Sprint on this request for exempt modification. Public safety communications will not be compromised as a result of the Sprint modifications to the facility. However, any concerns or questions you or any other town officials may have regarding these specific Sprint modifications to the tower at this time and in the future may be addressed by Ms. Howlett.

Thank you.

Melanie A. Bachman
Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051
860-827-2951

From: Margus Laan [mailto:mlaan@plymouthct.us]
Sent: Friday, July 26, 2013 4:10 PM
To: CSC-DL Siting Council
Cc: dbertnagel@aol.com; David Bertnagel
Subject: EM-SPRINT-111-130712

July 26, 2013

Ms. Melanie Bachman
Acting Executive Director
Connecticut Siting Council

State of Connecticut
New Britain, CT 06051

Re: EM-SPRINT-111-130712

Dear Ms. Bachman:

Thank you for the notification and request for input on the application EM-SPRINT-111-130712 by Sprint Spectrum L.P. to modify the existing telecommunications facility located at 171 Town Hill Road in the Town of Plymouth, Connecticut.

Our concern continues to be that public safety not be compromised by the changes proposed by Sprint Spectrum L.P. at the telecommunication facility at 171 Town Hill Road in the Town of Plymouth. Please keep the Town of Plymouth appraised of developments with this application and its resolution.

Look forward to hearing from you. Thank you again for the opportunity to comment.

Respectfully,
Margus T. Laan, AICP
Director of Planning & Economic Development.

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

May 17, 2013

Melanie Howlett
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-111-130501** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 171 Town Hall Road, Plymouth, Connecticut.

Dear Ms. Howlett:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 30, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/cm

c: The Honorable Vincent Festa, Jr., Mayor, Town of Plymouth
Khara Dodds, Town Planner, Town of Plymouth

EM-CING-111-130501

HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT, 06811
P.: 203.797.1112

HPC WIRELESS SERVICES

ORIGINAL

April 30, 2013

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: New Cingular Wireless PCS, LLC – Exempt Modification
171 Town Hall Road, Plymouth (Terryville)

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of the Town of Plymouth.

AT&T plans to modify the existing wireless communications facility owned by T-Mobile and located at 171 Town Hill Road, Plymouth (Terryville), (coordinates 41°-40'-6.21" N, 73°-01'-63" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. AT&T will relocate six (6) existing antennas, and then add three (3) LTE panel antennas, six (6) RRUs (remote radio units) behind the LTEs, and one (1) Surge Arrestor to the existing platform, all at a centerline height of approximately 115'. AT&T will also place DC power and fiber runs along the existing coaxial cable run. These changes will not extend the height of the approximately 169' structure.

2. AT&T will place related equipment in an existing Equipment Shelter and mount a new GPS antenna on the existing Ice Bridge Post. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 2.43%; the combined site operations will result in a total power density of approximately 61.05%.

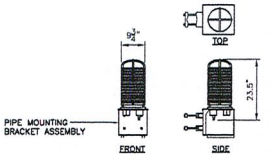
Please contact me by phone at (203) 610-1071, or by e-mail at mjhowlett@optonline.net, if there are any questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

Attachments

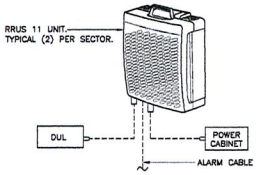
cc: Honorable Vincent Festa Jr. Mayor, Town of Plymouth
Terryville County Fair Inc. (underlying property owner)



SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.	20 LBS. (WITHOUT MOUNT)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.

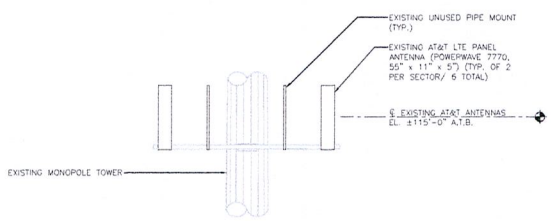
6 / C-2 SURGE ARRESTOR DETAIL
NOT TO SCALE



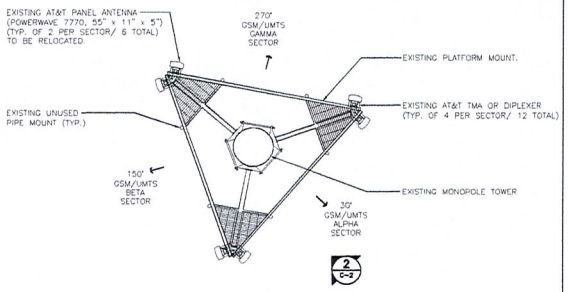
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 11	17.8"L x 17.3"W x 7.2"D	BAND 4: 44 LBS. BAND 12: 50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. SIDE: 0" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

7 / C-2 RRU DETAIL
NOT TO SCALE

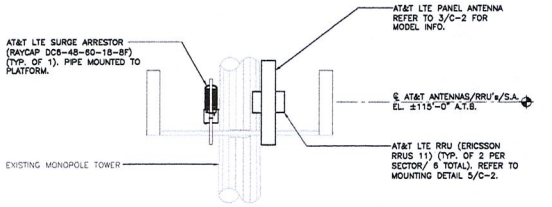


2 / C-2 EXISTING ANTENNA SECTOR ELEVATION
SCALE: 1/4" = 1'-0"

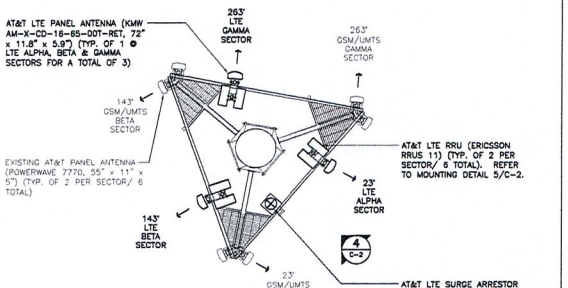


1 / C-2 EXISTING ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH



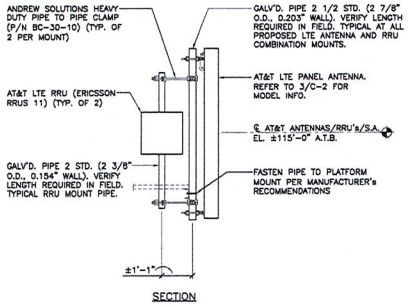
4 / C-2 PROPOSED LTE ANTENNA SECTOR ELEVATION
SCALE: 1/4" = 1'-0"

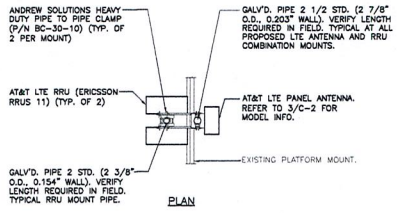


3 / C-2 PROPOSED ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH

NOTES:
1. ROTATE EXISTING GSM/UMTS ANTENNAS TO MATCH LTE ANTENNA ORIENTATIONS AT EACH PLATFORM FACE.
2. PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.
3. REFER TO CROWN CASTLE AND FINAL AT&T RF DATA SHEET PRIOR TO INSTALLATION OF TOWER MOUNTED LTE RELATED ANTENNAS, CABLES AND RELATED EQUIPMENT
4. COORDINATE ANTENNA CENTERLINE ELEVATION, RRU/SURGE ARRESTOR MOUNTING ELEVATION, ATTACHMENT HARDWARE WITH CROWN CASTLE.





5 / C-2 LTE ANTENNA/RRU MOUNT DETAILS
SCALE: 1/2" = 1'-0"

DESIGNED BY:	DEB
DRAWN BY:	HMR
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY
1	04/23/13	HMR	DEB
0	08/15/12	CLT	DEB

CONSTRUCTION – CLIENT REVIEW
CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
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(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.Centeking.com

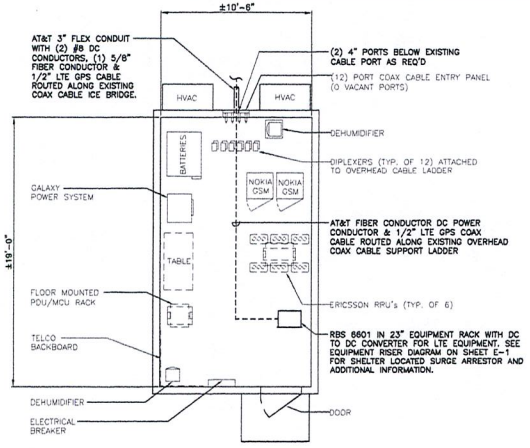
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY LTE UPGRADE
CT1086
CROWN SITE # 826768
PLYMOUTH TOWN HILL ROAD
171 TOWN HILL ROAD
TERRYVILLE, CT 06786

DATE:	08/15/12
SCALE:	AS NOTED
JOB NO.	12063.C011

LTE EQUIPMENT DETAILS

C-2

Sheet No. 4 of 6



2 C-1 EQUIPMENT BUILDING FLOOR PLAN

SCALE: 1/4" = 1'-0"

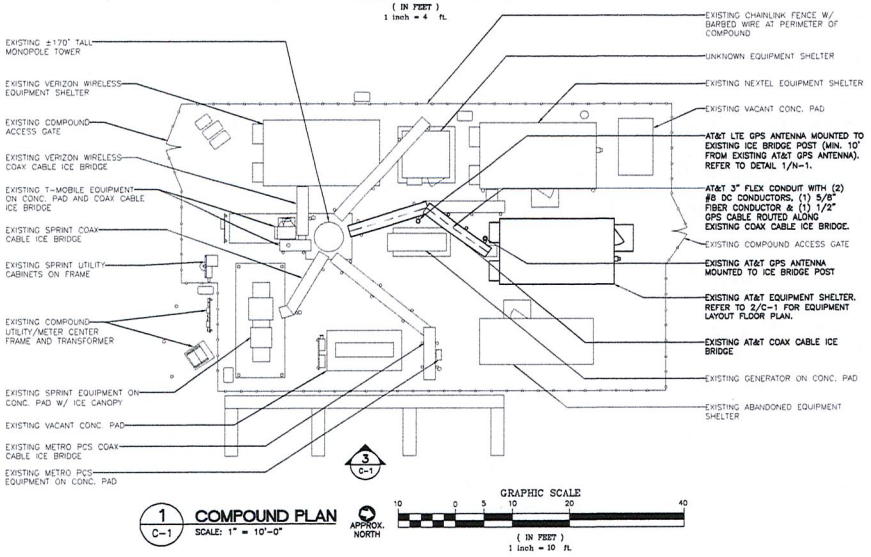
APPROX. NORTH

GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)

1 inch = 4 ft.



1 C-1 COMPOUND PLAN

SCALE: 1" = 10'-0"

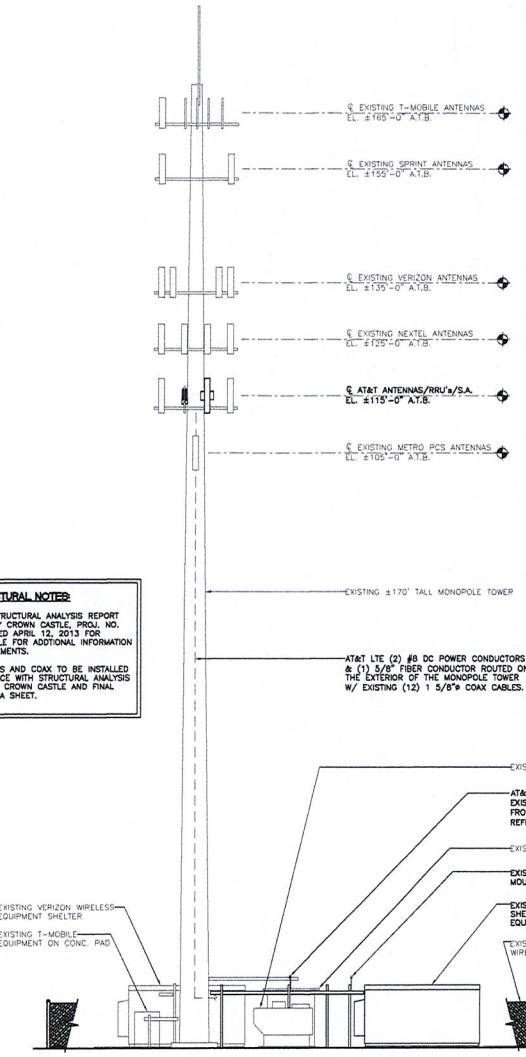
APPROX. NORTH

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 inch = 10 ft.



TOWER STRUCTURAL NOTES:

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CROWN CASTLE, PROJ. NO. 597472, DATED APRIL 12, 2013 FOR CROWN CASTLE FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

3 C-1 EAST ELEVATION

SCALE: 1" = 10'-0"

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 inch = 10 ft.

DESIGNED BY:	DEB
DRAWN BY:	HMR
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	
0	06/15/12	CLT	DEB	CONSTRUCTION - CLIENT REVIEW
1	04/23/13	HMR	DEB	CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

NEXLINK

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Centered on Solutions℠
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(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
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CT1086
CROWN SITE # 826768
PLYMOUTH TOWN HILL ROAD
171 TOWN HILL ROAD
TERRYVILLE, CT 06786

DATE:	06/15/12
SCALE:	AS NOTED
JOB NO.	12063.C011

PLANS AND ELEVATION

C-1

Sheet No. 3 of 6

Date: **April 12, 2013**

Jason Rouse
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1086
	Carrier Site Name:	CT1086/Terryville CT
Crown Castle Designation:	**Crown Castle BU Number:**	826768
	Crown Castle Site Name:	PLYMOUTH/RT 6
	Crown Castle JDE Job Number:	219383
	Crown Castle Work Order Number:	597472
	Crown Castle Application Number:	178763 Rev. 2
Engineering Firm Designation:	**Crown Castle Project Number:**	597472
Site Data:	**171 Town Hill Road, Plymouth, Litchfield County, CT** **Latitude *41° 40' 6.197"*, Longitude *-73° 1' 11.842"*** **169 Foot - Monopole Tower**	

Dear Jason Rouse,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 597472, in accordance with application 178763, revision 2.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Mitchell Prust, EIT / MLB

Respectfully submitted by:

STATE OF CONNECTICUT
AARON C. POOT
No. 25050
LICENSED
PROFESSIONAL ENGINEER

Aaron C. Poot, P.E.
Manager Engineering

tnxTower Report - version 6.0.4.0

4/12/13

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 169 ft Monopole tower designed by PIROD MANUFACTURES INC. in September of 2000. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
115.0	115.0	6	ericsson	RRUS 11	2 1	3/4 3/8	-
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		12	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	169.0	1	decibel	ASP-952	4	7/8	1
		1	rfs celwave	PD220			
		1	rfs celwave	PD455-6			
		1	sinclair	SRL-229			
	165.0	6	ericsson	AIR 21 w/ Mount Pipe	16	1-5/8	2
		3	ericsson	AIR 33 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 403-1]	-	-	1
155.0	155.0	9	decibel	DB980H90E-M w/ Mount Pipe	9	1-5/8	1
		1	tower mounts	Platform Mount [LP 403-1]			
135.0	135.0	3	antel	BXA-171085-8BF-EDIN-0 w/ Mount Pipe	12	1-5/8	1
		3	antel	BXA-70063/6CF w/ Mount Pipe			
		6	antel	LPA-80080/6CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 304-1]			
125.0	125.0	12	decibel	DB846G90A-XY w/ Mount Pipe	15	1-5/8	1
		1	tower mounts	Platform Mount [LP 304-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
121.0	125.0	1	rfs celwave	201-4	1	1/2	1
	121.0	1	tower mounts	Side Arm Mount [SO 701-1]			
115.0	115.0	12	powerwave technologies	LGP2140X	-	-	3
		6	kathrein	AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	12	1-5/8	1
		1	tower mounts	Platform Mount [LP 303-1]			
105.0	105.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
80.0	91.0	1	rfs celwave	PD455-6	1	7/8	1
	80.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Existing, Proposed, and Future Loading
3) Equipment to be removed; NOT considered in the analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
170	170	12	ems wireless	RR65-16-00XP	12	1-5/8
160	160	12	ems wireless	RR65-16-00XP	12	1-5/8
150	150	12	ems wireless	RR65-16-00XP	12	1-5/8
140	140	12	ems wireless	RR65-16-00XP	12	1-5/8
130	130	12	ems wireless	RR65-16-00XP	12	1-5/8
120	120	12	ems wireless	RR65-16-00XP	12	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C.	3491991	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PiRod, Inc.	3491992	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	169 - 164.25	Pole	TP26x18x0.25	1	-2.17	1062.23	1.0	Pass
L2	164.25 - 129.125	Pole	TP34.063x21.5x0.3125	2	-9.42	1674.11	22.6	Pass
L3	129.125 - 95.4583	Pole	TP41.75x32.1538x0.375	3	-20.58	2486.28	45.0	Pass
L4	95.4583 - 62.625	Pole	TP49.063x39.8058x0.375	4	-29.29	2928.68	64.1	Pass
L5	62.625 - 30.625	Pole	TP56.125x46.9553x0.375	5	-39.13	3355.11	75.3	Pass
L6	30.625 - 0	Pole	TP62.938x53.8467x0.375	6	-52.13	3684.97	86.4	Pass
							Summary	
						Pole (L6)	86.4	Pass
						Rating =	86.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.7	Pass
1,2	Base Plate	0	86.4	Pass
1	Base Foundation	0	80.2	Pass

Structure Rating (max from all components) =	86.4%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Base plate has the same capacity as its respective shaft.

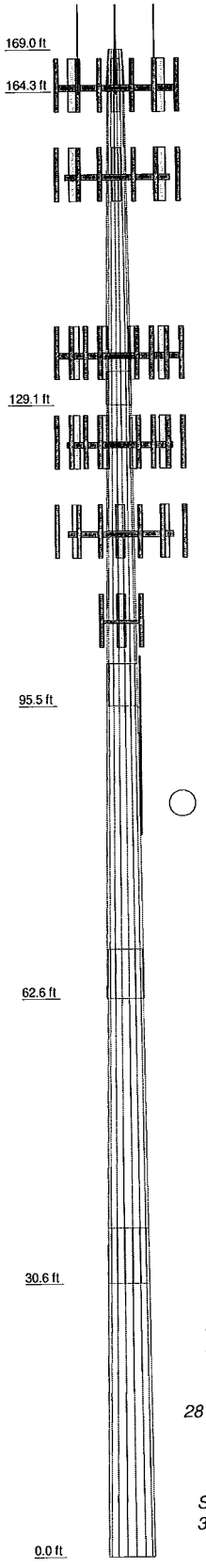
4.1) Recommendations

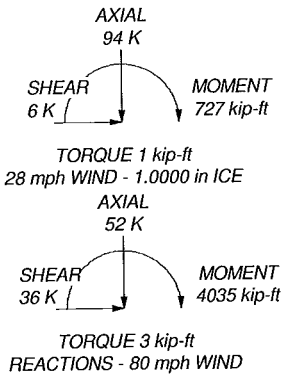
The tower and its base and anchor foundations have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	4.75	18	0.2500	2.38	18.0000	26.0000		0.3
2	37.50	18	0.3125	3.83	21.5000	34.0630		3.5
3	37.50	18	0.3750	4.67	32.1538	41.7500		5.6
4	37.50	18	0.3750	5.50	39.8058	49.0630	A572-65	6.7
5	37.50	18	0.3750	6.25	46.9553	56.1250		7.8
6	36.88	18	0.3750		53.8467	62.9380		8.7
								32.4





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 403-1]	165	(4) DB846G90A-XY w/ Mount Pipe	125
(2) AIR 21 w/ Mount Pipe	165	(4) DB846G90A-XY w/ Mount Pipe	125
(2) AIR 21 w/ Mount Pipe	165	(4) DB846G90A-XY w/ Mount Pipe	125
(2) AIR 21 w/ Mount Pipe	165	Side Arm Mount [SO 701-1]	121
AIR 33 w/ Mount Pipe	165	201-4	121
AIR 33 w/ Mount Pipe	165	Platform Mount [LP 303-1]	115
AIR 33 w/ Mount Pipe	165	(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	115
ATMAA1412D-1A20	165	(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	115
ATMAA1412D-1A20	165	(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	115
ATMAA1412D-1A20	165	AM-X-CD-16-65-00T-RET w/ Mount Pipe	115
PD455-6	165	AM-X-CD-16-65-00T-RET w/ Mount Pipe	115
SRL-229	165	AM-X-CD-16-65-00T-RET w/ Mount Pipe	115
PD220	165	(2) RRUS 11	115
ASP-952	165	(2) RRUS 11	115
Platform Mount [LP 403-1]	155	(2) RRUS 11	115
(3) DB980H90E-M w/ Mount Pipe	155	(2) LGP2140X	115
(3) DB980H90E-M w/ Mount Pipe	155	(4) LGP2140X	115
(3) DB980H90E-M w/ Mount Pipe	155	(6) LGP2140X	115
Platform Mount [LP 304-1]	135	DC6-48-60-18-8F	115
(2) LPA-80080/6CF w/ Mount Pipe	135	6' x 2" Mount Pipe	115
(2) LPA-80080/6CF w/ Mount Pipe	135	6' x 2" Mount Pipe	115
(2) LPA-80080/6CF w/ Mount Pipe	135	6' x 2" Mount Pipe	115
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	135	Pipe Mount [PM 601-3]	105
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	135	APXV18-206517S-C w/ Mount Pipe	105
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	135	APXV18-206517S-C w/ Mount Pipe	105
BXA-70063/6CF w/ Mount Pipe	135	APXV18-206517S-C w/ Mount Pipe	105
BXA-70063/6CF w/ Mount Pipe	135	Side Arm Mount [SO 701-1]	80
BXA-70063/6CF w/ Mount Pipe	135	PD455-6	80
(2) FD9R6004/2C-3L	135		
(2) FD9R6004/2C-3L	135		
(2) FD9R6004/2C-3L	135		
Platform Mount [LP 304-1]	125		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 86.4%

CROWN CASTLE
We Are Solutions

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2254

Job: **BU #826768**			
Project:			
Client: Crown Castle	Drawn by: MBlack		App'd:
Code: TIA/EIA-222-F	Date: 04/12/13		Scale: NTS
Path: R:\SA Models - Letters\Work Area\MPrust\826768 - Rerun\temp\826768.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

4) Tower is located in Litchfield County, Connecticut.
5) Basic wind speed of 80 mph.
6) Nominal ice thickness of 1.0000 in.
7) Ice thickness is considered to increase with height.
8) Ice density of 56 pcf.
9) A wind speed of 28 mph is used in combination with ice.
10) Temperature drop of 50 °F.
11) Deflections calculated using a wind speed of 50 mph.
12) A non-linear (P-delta) analysis was used.
13) Pressures are calculated at each section.
14) Stress ratio used in pole design is 1.333.
15) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
√ Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	√ Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	169.00-164.25	4.75	2.38	18	18.0000	26.0000	0.2500	1.0000	A572-65 (65 ksi)
L2	164.25-129.13	37.50	3.83	18	21.5000	34.0630	0.3125	1.2500	A572-65 (65 ksi)
L3	129.13-95.46	37.50	4.67	18	32.1538	41.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	95.46-62.63	37.50	5.50	18	39.8058	49.0630	0.3750	1.5000	A572-65 (65 ksi)
L5	62.63-30.63	37.50	6.25	18	46.9553	56.1250	0.3750	1.5000	A572-65 (65 ksi)
L6	30.63-0.00	36.88		18	53.8467	62.9380	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2777	14.0846	560.6340	6.3012	9.1440	61.3117	1122.0058	7.0437	2.7280	10.912
	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
L2	22.6396	21.0154	1191.8828	7.5216	10.9220	109.1268	2385.3338	10.5097	3.2340	10.349
	34.5885	33.4763	4817.6476	11.9814	17.3040	278.4123	9641.6344	16.7413	5.4451	17.424
L3	33.6459	37.8247	4826.0009	11.2815	16.3341	295.4552	9658.3520	18.9159	4.9991	13.331
	42.3941	49.2466	10650.982 2	14.6881	21.2090	502.1916	21315.979 3	24.6280	6.6880	17.835
L4	41.5897	46.9325	9218.9728	13.9979	20.2213	455.9030	18450.076 3	23.4707	6.3458	16.922
	49.8199	57.9509	17355.672 5	17.2842	24.9240	696.3437	34734.182 0	28.9810	7.9751	21.267
L5	49.0453	55.4422	15197.839 9	16.5360	23.8533	637.1383	30415.677 6	27.7264	7.6041	20.278
	56.9908	66.3564	26056.150 6	19.7913	28.5115	913.8821	52146.586 5	33.1845	9.2180	24.581
L6	56.2421	63.6447	22990.474 3	18.9825	27.3541	840.4754	46011.200 1	31.8284	8.8170	23.512
	63.9089	74.4656	36823.777 5	22.2099	31.9725	1151.7327	73696.008 6	37.2399	10.4171	27.779

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 169.00-164.25				1	1	1		
L2 164.25-129.13				1	1	1		
L3 129.13-95.46				1	1	1		
L4 95.46-62.63				1	1	1		
L5 62.63-30.63				1	1	1		
L6 30.63-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF5-50A(7/8")	C	No	Inside Pole	165.00 - 0.00	4	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF7-50A(1-5/8")	C	No	Inside Pole	165.00 - 0.00	16	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	Inside Pole	155.00 - 0.00	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	A	No	Inside Pole	135.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	125.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	125.00 - 0.00	3	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF4-50A(1/2")	A	No	CaAa (Out Of Face)	121.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	115.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	105.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF5-50A(7/8")	A	No	Inside Pole	80.00 - 0.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
**								
**								
FB-L98-002-XXX(3/8)	A	No	Inside Pole	115.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86T(3/4)	A	No	Inside Pole	115.00 - 0.00	2	No Ice	0.00	0.53
						1/2" Ice	0.00	0.53
						1" Ice	0.00	0.53
						2" Ice	0.00	0.53
						4" Ice	0.00	0.53
2" Rigid Conduit	A	No	CaAa (Out Of Face)	115.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	4.33
						1" Ice	0.00	6.47
						2" Ice	0.00	12.57
						4" Ice	0.00	32.12
**								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	169.00-164.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	164.25-129.13	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.19

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.51
L3	129.13-95.46	A	0.000	0.000	0.000	0.000	0.46
		B	0.000	0.000	0.000	0.000	0.25
		C	0.000	0.000	0.000	17.548	1.04
L4	95.46-62.63	A	0.000	0.000	0.000	0.000	0.62
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	0.000	19.503	1.20
L5	62.63-30.63	A	0.000	0.000	0.000	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	0.000	19.008	1.17
L6	30.63-0.00	A	0.000	0.000	0.000	0.000	0.59
		B	0.000	0.000	0.000	0.000	0.23
		C	0.000	0.000	0.000	18.191	1.12

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	169.00-164.25	A	1.214	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	164.25-129.13	A	1.195	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.19
		C		0.000	0.000	0.000	0.000	0.51
L3	129.13-95.46	A	1.158	0.000	0.000	0.000	0.000	0.90
		B		0.000	0.000	0.000	0.000	0.25
		C		0.000	0.000	0.000	38.729	4.31
L4	95.46-62.63	A	1.110	0.000	0.000	0.000	0.000	1.77
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	42.310	5.28
L5	62.63-30.63	A	1.042	0.000	0.000	0.000	0.000	1.66
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	40.322	4.89
L6	30.63-0.00	A	1.000	0.000	0.000	0.000	0.000	1.49
		B		0.000	0.000	0.000	0.000	0.23
		C		0.000	0.000	0.000	37.345	4.34

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	169.00-164.25	0.0000	0.0000	0.0000	0.0000
L2	164.25-129.13	0.0000	0.0000	0.0000	0.0000
L3	129.13-95.46	-0.5883	0.3397	-1.0579	0.6108
L4	95.46-62.63	-0.6661	0.3846	-1.2000	0.6928
L5	62.63-30.63	-0.6789	0.3920	-1.2288	0.7094
L6	30.63-0.00	-0.6887	0.3976	-1.2351	0.7131

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 403-1]	C	None			0.0000	165.00	No Ice	18.85	18.85	1.50
							1/2" Ice	24.30	24.30	1.80
							1" Ice	29.75	29.75	2.09
							2" Ice	40.65	40.65	2.69
							4" Ice	62.45	62.45	3.87
(2) AIR 21 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.62	5.47	0.10
							1/2" Ice	7.13	6.28	0.15
							1" Ice	7.64	7.04	0.22
							2" Ice	8.68	8.61	0.36
							4" Ice	10.89	11.96	0.78
(2) AIR 21 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.62	5.47	0.10
							1/2" Ice	7.13	6.28	0.15
							1" Ice	7.64	7.04	0.22
							2" Ice	8.68	8.61	0.36
							4" Ice	10.89	11.96	0.78
(2) AIR 21 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.62	5.47	0.10
							1/2" Ice	7.13	6.28	0.15
							1" Ice	7.64	7.04	0.22
							2" Ice	8.68	8.61	0.36
							4" Ice	10.89	11.96	0.78
AIR 33 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.54	5.82	0.12
							1/2" Ice	7.04	6.63	0.17
							1" Ice	7.54	7.39	0.24
							2" Ice	8.58	8.96	0.39
							4" Ice	10.78	12.32	0.81
AIR 33 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.54	5.82	0.12
							1/2" Ice	7.04	6.63	0.17
							1" Ice	7.54	7.39	0.24
							2" Ice	8.58	8.96	0.39
							4" Ice	10.78	12.32	0.81
AIR 33 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.54	5.82	0.12
							1/2" Ice	7.04	6.63	0.17
							1" Ice	7.54	7.39	0.24
							2" Ice	8.58	8.96	0.39
							4" Ice	10.78	12.32	0.81
ATMAA1412D-1A20	A	From Leg	4.00	0.00	0.0000	165.00	No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06
							4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	B	From Leg	4.00	0.00	0.0000	165.00	No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06
							4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	C	From Leg	4.00	0.00	0.0000	165.00	No Ice	0.47	1.17	0.01
							1/2" Ice	0.57	1.31	0.02
							1" Ice	0.69	1.47	0.03
							2" Ice	0.95	1.81	0.06
							4" Ice	1.57	2.58	0.14
PD455-6	A	From Leg	4.00	0.00	0.0000	165.00	No Ice	6.05	6.05	0.02
							1/2" Ice	8.28	8.28	0.07
							1" Ice	10.53	10.53	0.12
							2" Ice	15.07	15.07	0.28
							4" Ice	24.37	24.37	0.77

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SRL-229	A	From Leg	4.00 0.00 4.00	0.0000	165.00	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.45 8.63 10.83 15.28 24.01	6.45 8.63 10.83 15.28 24.01	0.03 0.07 0.13 0.29 0.79
PD220	B	From Leg	4.00 0.00 4.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.08 5.30 7.54 12.06 21.31	3.08 5.30 7.54 12.06 21.31	0.02 0.05 0.09 0.21 0.62
ASP-952	C	From Leg	4.00 0.00 4.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 4.16 5.30 6.96 9.76	3.02 4.16 5.30 6.96 9.76	0.02 0.04 0.07 0.15 0.40
** Platform Mount [LP 403-1]	C	None		0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.85 24.30 29.75 40.65 62.45	18.85 24.30 29.75 40.65 62.45	1.50 1.80 2.09 2.69 3.87
(3) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
(3) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
(3) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
** Platform Mount [LP 304-1]	C	None		0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	17.46 22.44 27.42 37.38 57.30	17.46 22.44 27.42 37.38 57.30	1.35 1.62 1.90 2.45 3.55
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	135.00	No Ice 1/2"	4.56 5.11	10.73 11.99	0.05 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	5.61	12.97	0.19
						1" Ice	6.65	14.98	0.36
						2" Ice	8.83	19.22	0.86
						4" Ice			
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00	0.0000	135.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00	0.0000	135.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00	0.0000	135.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	135.00	No Ice	7.98	5.70	0.04
			0.00			1/2"	8.62	6.85	0.10
			0.00			Ice	9.23	7.71	0.17
						1" Ice	10.47	9.50	0.33
						2" Ice	13.08	13.26	0.80
						4" Ice			
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	135.00	No Ice	7.98	5.70	0.04
			0.00			1/2"	8.62	6.85	0.10
			0.00			Ice	9.23	7.71	0.17
						1" Ice	10.47	9.50	0.33
						2" Ice	13.08	13.26	0.80
						4" Ice			
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00	0.0000	135.00	No Ice	7.98	5.70	0.04
			0.00			1/2"	8.62	6.85	0.10
			0.00			Ice	9.23	7.71	0.17
						1" Ice	10.47	9.50	0.33
						2" Ice	13.08	13.26	0.80
						4" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	135.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.0000	135.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	135.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
**									
Platform Mount [LP 304-1]	C	None		0.0000	125.00	No Ice	17.46	17.46	1.35
						1/2"	22.44	22.44	1.62
						Ice	27.42	27.42	1.90
						1" Ice	37.38	37.38	2.45
						2" Ice	57.30	57.30	3.55
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(4) DB846G90A-XY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.23 5.78 6.30 7.37 9.69	7.53 8.72 9.62 11.45 15.60	0.04 0.09 0.16 0.32 0.77
(4) DB846G90A-XY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.23 5.78 6.30 7.37 9.69	7.53 8.72 9.62 11.45 15.60	0.04 0.09 0.16 0.32 0.77
(4) DB846G90A-XY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.23 5.78 6.30 7.37 9.69	7.53 8.72 9.62 11.45 15.60	0.04 0.09 0.16 0.32 0.77
**									
Side Arm Mount [SO 701-1]	A	From Leg	2.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18
201-4	A	From Leg	4.00 0.00 4.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 2.00 2.90 4.31 6.53	1.13 2.00 2.90 4.31 6.53	0.00 0.01 0.03 0.08 0.24
**									
Platform Mount [LP 303-1]	C	None		0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	14.66 18.87 23.08 31.50 48.34	14.66 18.87 23.08 31.50 48.34	1.25 1.48 1.71 2.18 3.10
(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.85 8.45 9.09 10.38 13.07	6.65 7.87 8.84 10.73 14.69	0.09 0.15 0.22 0.39 0.88
(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.85 8.45 9.09 10.38 13.07	6.65 7.87 8.84 10.73 14.69	0.09 0.15 0.22 0.39 0.88
(2) AP14/17-880/1940/088D/ADT/XXP w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.85 8.45 9.09 10.38 13.07	6.65 7.87 8.84 10.73 14.69	0.09 0.15 0.22 0.39 0.88
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice Ice	8.50 9.15 9.77	6.30 7.48 8.37	0.07 0.14 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice	11.03	10.18	0.38
							2" Ice	13.68	14.02	0.87
							4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
(2) RRUS 11	A	From Leg	4.00	0.00	0.0000	115.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			0.00				1" Ice	3.74	1.74	0.09
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
(2) RRUS 11	B	From Leg	4.00	0.00	0.0000	115.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			0.00				1" Ice	3.74	1.74	0.09
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
(2) RRUS 11	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			0.00				1" Ice	3.74	1.74	0.09
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
(2) LGP2140X	A	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.26	0.38	0.02
			0.00				1/2" Ice	1.42	0.49	0.03
			0.00				1" Ice	1.58	0.62	0.04
							2" Ice	1.94	0.89	0.06
							4" Ice	2.75	1.54	0.14
(4) LGP2140X	B	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.26	0.38	0.02
			0.00				1/2" Ice	1.42	0.49	0.03
			0.00				1" Ice	1.58	0.62	0.04
							2" Ice	1.94	0.89	0.06
							4" Ice	2.75	1.54	0.14
(6) LGP2140X	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.26	0.38	0.02
			0.00				1/2" Ice	1.42	0.49	0.03
			0.00				1" Ice	1.58	0.62	0.04
							2" Ice	1.94	0.89	0.06
							4" Ice	2.75	1.54	0.14
DC6-48-60-18-8F	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.27	1.27	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
			0.00				1" Ice	1.66	1.66	0.05
							2" Ice	2.09	2.09	0.10
							4" Ice	3.10	3.10	0.21
6' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
							2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
6' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
							2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
6' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	1.43	1.43	0.02
							1/2"	1.92	1.92	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
**									
Pipe Mount [PM 601-3]	C	None		0.0000	105.00	No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
						2" Ice	13.11	13.11	0.53
						4" Ice			
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.09 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.09 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.09 0.15 0.28 0.68
**									
Side Arm Mount [SO 701-1]	A	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18
PD455-6	A	From Leg	4.00 0.00 11.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.05 8.28 10.53 15.07 24.37	6.05 8.28 10.53 15.07 24.37	0.02 0.07 0.12 0.28 0.77
**									

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice

Comb. No.	Description
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	169 - 164.25	Pole	Max Tension	14	0.76	-0.02	0.18
			Max. Compression	14	-4.62	-0.06	0.61
			Max. Mx	11	-2.16	4.49	-0.04
			Max. My	2	-2.17	0.00	4.57
			Max. Vy	11	-3.15	4.49	-0.04
			Max. Vx	8	3.19	0.00	-4.41
			Max. Torque	11			-1.78
L2	164.25 - 129.125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.47	0.03	1.12
			Max. Mx	11	-9.42	245.08	0.05
			Max. My	2	-9.42	0.01	245.17
			Max. Vy	11	-13.24	245.08	0.05
			Max. Vx	8	13.24	0.03	-244.87
			Max. Torque	5			2.09
L3	129.125 - 95.4583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40.92	5.68	-1.08
			Max. Mx	11	-20.58	905.75	-0.74
			Max. My	8	-20.60	1.48	-902.58
			Max. Vy	11	-25.94	905.75	-0.74
			Max. Vx	8	25.80	1.48	-902.58
			Max. Torque	11			-2.56
L4	95.4583 - 62.625	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-56.66	13.45	-1.81
			Max. Mx	11	-29.29	1797.70	-1.58
			Max. My	8	-29.30	3.61	-1788.34
			Max. Vy	11	-29.61	1797.70	-1.58
			Max. Vx	8	29.44	3.61	-1788.34
			Max. Torque	5			3.59
L5	62.625 - 30.625	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-73.28	21.93	-3.82

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	11	-39.13	2772.86	-2.74
			Max. My	8	-39.14	5.89	-2757.05
			Max. Vy	11	-32.60	2772.86	-2.74
			Max. Vx	8	32.42	5.89	-2757.05
			Max. Torque	5			3.53
L6	30.625 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-93.89	32.03	-6.22
			Max. Mx	11	-52.13	4034.89	-4.16
			Max. My	8	-52.14	8.75	-4011.41
			Max. Vy	11	-35.72	4034.89	-4.16
			Max. Vx	8	35.55	8.75	-4011.41
			Max. Torque	4			3.42

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	93.89	0.00	-0.00
	Max. H_x	11	52.15	35.69	-0.03
	Max. H_z	2	52.15	-0.03	35.53
	Max. M_x	2	4010.28	-0.03	35.53
	Max. M_z	5	4024.56	-35.69	0.03
	Max. Torsion	4	3.41	-30.93	17.79
	Min. Vert	1	52.15	0.00	0.00
	Min. H_x	5	52.15	-35.69	0.03
	Min. H_z	8	52.15	0.03	-35.53
	Min. M_x	8	-4011.41	0.03	-35.53
	Min. M_z	11	-4034.89	35.69	-0.03
	Min. Torsion	10	-3.41	30.93	-17.79

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	52.15	0.00	0.00	0.55	5.02	0.00
Dead+Wind 0 deg - No Ice	52.15	0.03	-35.53	-4010.28	1.59	-1.10
Dead+Wind 30 deg - No Ice	52.15	17.87	-30.78	-3474.72	-2012.81	-2.61
Dead+Wind 60 deg - No Ice	52.15	30.93	-17.79	-2007.94	-3486.48	-3.41
Dead+Wind 90 deg - No Ice	52.15	35.69	-0.03	-3.00	-4024.56	-3.31
Dead+Wind 120 deg - No Ice	52.15	30.90	17.74	2002.90	-3482.89	-2.31
Dead+Wind 150 deg - No Ice	52.15	17.82	30.75	3472.28	-2006.60	-0.70
Dead+Wind 180 deg - No Ice	52.15	-0.03	35.53	4011.41	8.75	1.10
Dead+Wind 210 deg - No Ice	52.15	-17.87	30.78	3475.85	2023.13	2.61
Dead+Wind 240 deg - No Ice	52.15	-30.93	17.79	2009.09	3496.80	3.41
Dead+Wind 270 deg - No Ice	52.15	-35.69	0.03	4.16	4034.89	3.31
Dead+Wind 300 deg - No Ice	52.15	-30.90	-17.74	-2001.74	3493.24	2.31
Dead+Wind 330 deg - No Ice	52.15	-17.82	-30.75	-3471.14	2016.95	0.70
Dead+Ice+Temp	93.89	-0.00	0.00	6.22	32.03	0.00
Dead+Wind 0 deg+Ice+Temp	93.89	0.00	-5.82	-684.96	31.63	-0.21
Dead+Wind 30 deg+Ice+Temp	93.89	2.93	-5.04	-592.61	-315.62	-0.55
Dead+Wind 60 deg+Ice+Temp	93.89	5.07	-2.91	-339.79	-569.70	-0.75
Dead+Wind 90 deg+Ice+Temp	93.89	5.85	-0.00	5.74	-662.51	-0.74
Dead+Wind 120 deg+Ice+Temp	93.89	5.07	2.91	351.41	-569.19	-0.54
Dead+Wind 150	93.89	2.92	5.04	604.59	-314.75	-0.19

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+Ice+Temp Dead+Wind 180 deg+Ice+Temp	93.89	-0.00	5.82	697.44	32.63	0.21
Dead+Wind 210 deg+Ice+Temp	93.89	-2.93	5.04	605.09	379.88	0.55
Dead+Wind 240 deg+Ice+Temp	93.89	-5.07	2.91	352.28	633.95	0.75
Dead+Wind 270 deg+Ice+Temp	93.89	-5.85	0.00	6.75	726.77	0.74
Dead+Wind 300 deg+Ice+Temp	93.89	-5.07	-2.91	-338.92	633.45	0.54
Dead+Wind 330 deg+Ice+Temp	93.89	-2.92	-5.04	-592.10	379.01	0.19
Dead+Wind 0 deg - Service	52.15	0.01	-13.88	-1567.17	3.78	-0.43
Dead+Wind 30 deg - Service	52.15	6.98	-12.02	-1357.83	-783.60	-1.02
Dead+Wind 60 deg - Service	52.15	12.08	-6.95	-784.51	-1359.62	-1.34
Dead+Wind 90 deg - Service	52.15	13.94	-0.01	-0.83	-1569.94	-1.30
Dead+Wind 120 deg - Service	52.15	12.07	6.93	783.22	-1358.22	-0.91
Dead+Wind 150 deg - Service	52.15	6.96	12.01	1357.57	-781.17	-0.28
Dead+Wind 180 deg - Service	52.15	-0.01	13.88	1568.30	6.58	0.43
Dead+Wind 210 deg - Service	52.15	-6.98	12.02	1358.96	793.95	1.02
Dead+Wind 240 deg - Service	52.15	-12.08	6.95	785.65	1369.97	1.34
Dead+Wind 270 deg - Service	52.15	-13.94	0.01	1.97	1580.29	1.30
Dead+Wind 300 deg - Service	52.15	-12.07	-6.93	-782.09	1368.57	0.91
Dead+Wind 330 deg - Service	52.15	-6.96	-12.01	-1356.44	791.53	0.28

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-52.15	0.00	0.00	52.15	0.00	0.000%
2	0.03	-52.15	-35.53	-0.03	52.15	35.53	0.000%
3	17.87	-52.15	-30.78	-17.87	52.15	30.78	0.000%
4	30.93	-52.15	-17.79	-30.93	52.15	17.79	0.000%
5	35.69	-52.15	-0.03	-35.69	52.15	0.03	0.000%
6	30.90	-52.15	17.74	-30.90	52.15	-17.74	0.000%
7	17.82	-52.15	30.75	-17.82	52.15	-30.75	0.000%
8	-0.03	-52.15	35.53	0.03	52.15	-35.53	0.000%
9	-17.87	-52.15	30.78	17.87	52.15	-30.78	0.000%
10	-30.93	-52.15	17.79	30.93	52.15	-17.79	0.000%
11	-35.69	-52.15	0.03	35.69	52.15	-0.03	0.000%
12	-30.90	-52.15	-17.74	30.90	52.15	17.74	0.000%
13	-17.82	-52.15	-30.75	17.82	52.15	30.75	0.000%
14	0.00	-93.89	0.00	0.00	93.89	-0.00	0.000%
15	0.00	-93.89	-5.82	-0.00	93.89	5.82	0.000%
16	2.93	-93.89	-5.04	-2.93	93.89	5.04	0.000%
17	5.07	-93.89	-2.91	-5.07	93.89	2.91	0.000%
18	5.85	-93.89	-0.00	-5.85	93.89	0.00	0.000%
19	5.07	-93.89	2.91	-5.07	93.89	-2.91	0.000%
20	2.92	-93.89	5.04	-2.92	93.89	-5.04	0.000%
21	-0.00	-93.89	5.82	0.00	93.89	-5.82	0.000%
22	-2.93	-93.89	5.04	2.93	93.89	-5.04	0.000%
23	-5.07	-93.89	2.91	5.07	93.89	-2.91	0.000%
24	-5.85	-93.89	0.00	5.85	93.89	-0.00	0.000%
25	-5.07	-93.89	-2.91	5.07	93.89	2.91	0.000%
26	-2.92	-93.89	-5.04	2.92	93.89	5.04	0.000%
27	0.01	-52.15	-13.88	-0.01	52.15	13.88	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
28	6.98	-52.15	-12.02	-6.98	52.15	12.02	0.000%
29	12.08	-52.15	-6.95	-12.08	52.15	6.95	0.000%
30	13.94	-52.15	-0.01	-13.94	52.15	0.01	0.000%
31	12.07	-52.15	6.93	-12.07	52.15	-6.93	0.000%
32	6.96	-52.15	12.01	-6.96	52.15	-12.01	0.000%
33	-0.01	-52.15	13.88	0.01	52.15	-13.88	0.000%
34	-6.98	-52.15	12.02	6.98	52.15	-12.02	0.000%
35	-12.08	-52.15	6.95	12.08	52.15	-6.95	0.000%
36	-13.94	-52.15	0.01	13.94	52.15	-0.01	0.000%
37	-12.07	-52.15	-6.93	12.07	52.15	6.93	0.000%
38	-6.96	-52.15	-12.01	6.96	52.15	12.01	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00037687
3	Yes	5	0.00000001	0.00046598
4	Yes	5	0.00000001	0.00050870
5	Yes	5	0.00000001	0.00004961
6	Yes	5	0.00000001	0.00046326
7	Yes	5	0.00000001	0.00048818
8	Yes	4	0.00000001	0.00041758
9	Yes	5	0.00000001	0.00050280
10	Yes	5	0.00000001	0.00046237
11	Yes	5	0.00000001	0.00004774
12	Yes	5	0.00000001	0.00050272
13	Yes	5	0.00000001	0.00047539
14	Yes	4	0.00000001	0.00009336
15	Yes	5	0.00000001	0.00016259
16	Yes	5	0.00000001	0.00016696
17	Yes	5	0.00000001	0.00016621
18	Yes	5	0.00000001	0.00015737
19	Yes	5	0.00000001	0.00016703
20	Yes	5	0.00000001	0.00016910
21	Yes	5	0.00000001	0.00016481
22	Yes	5	0.00000001	0.00017915
23	Yes	5	0.00000001	0.00018048
24	Yes	5	0.00000001	0.00017136
25	Yes	5	0.00000001	0.00017928
26	Yes	5	0.00000001	0.00017648
27	Yes	4	0.00000001	0.00013835
28	Yes	5	0.00000001	0.00004139
29	Yes	5	0.00000001	0.00004961
30	Yes	4	0.00000001	0.00027875
31	Yes	5	0.00000001	0.00004117
32	Yes	5	0.00000001	0.00004550
33	Yes	4	0.00000001	0.00014026
34	Yes	5	0.00000001	0.00004843
35	Yes	5	0.00000001	0.00004117
36	Yes	4	0.00000001	0.00027681
37	Yes	5	0.00000001	0.00004862
38	Yes	5	0.00000001	0.00004326

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164.25	32.932	36	1.5455	0.0077
L2	166.625 - 129.125	32.163	36	1.5454	0.0077
L3	132.958 - 95.4583	21.593	36	1.4169	0.0036
L4	100.125 - 62.625	12.604	36	1.1617	0.0022
L5	68.125 - 30.625	5.911	36	0.8042	0.0013
L6	36.875 - 0	1.773	36	0.4313	0.0006

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	Platform Mount [LP 403-1]	36	31.638	1.5447	0.0077	39437
155.00	Platform Mount [LP 403-1]	36	28.427	1.5253	0.0068	20728
135.00	Platform Mount [LP 304-1]	36	22.206	1.4295	0.0039	10211
125.00	Platform Mount [LP 304-1]	36	19.256	1.3649	0.0029	8305
121.00	Side Arm Mount [SO 701-1]	36	18.115	1.3367	0.0027	7736
115.00	Platform Mount [LP 303-1]	36	16.451	1.2915	0.0024	7016
105.00	Pipe Mount [PM 601-3]	36	13.818	1.2073	0.0023	6074
80.00	Side Arm Mount [SO 701-1]	36	8.129	0.9446	0.0017	5358

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164.25	84.028	11	3.9451	0.0196
L2	166.625 - 129.125	82.068	11	3.9451	0.0196
L3	132.958 - 95.4583	55.102	11	3.6167	0.0091
L4	100.125 - 62.625	32.168	11	2.9653	0.0056
L5	68.125 - 30.625	15.090	11	2.0529	0.0033
L6	36.875 - 0	4.527	11	1.1011	0.0014

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	Platform Mount [LP 403-1]	11	80.728	3.9432	0.0196	15693
155.00	Platform Mount [LP 403-1]	11	72.535	3.8935	0.0174	8208
135.00	Platform Mount [LP 304-1]	11	56.665	3.6487	0.0098	4029
125.00	Platform Mount [LP 304-1]	11	49.141	3.4839	0.0074	3273
121.00	Side Arm Mount [SO 701-1]	11	46.230	3.4120	0.0068	3048
115.00	Platform Mount [LP 303-1]	11	41.985	3.2966	0.0062	2764
105.00	Pipe Mount [PM 601-3]	11	35.266	3.0816	0.0058	2392
80.00	Side Arm Mount [SO 701-1]	11	20.751	2.4114	0.0042	2106

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	169 - 164.25 (1)	TP26x18x0.25	4.75	0.00	0.0	39.000	20.4326	-2.17	796.87	0.003
L2	164.25 - 129.125 (2)	TP34.063x21.5x0.3125	37.50	0.00	0.0	39.000	32.2025	-9.42	1255.90	0.008
L3	129.125 - 95.4583 (3)	TP41.75x32.1538x0.375	37.50	0.00	0.0	39.000	47.8252	-20.58	1865.18	0.011
L4	95.4583 - 62.625 (4)	TP49.063x39.8058x0.375	37.50	0.00	0.0	39.000	56.3349	-29.29	2197.06	0.013
L5	62.625 - 30.625 (5)	TP56.125x46.9553x0.375	37.50	0.00	0.0	39.000	64.5374	-39.13	2516.96	0.016
L6	30.625 - 0 (6)	TP62.938x53.8467x0.375	36.88	0.00	0.0	37.123	74.4656	-52.13	2764.42	0.019

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	169 - 164.25 (1)	TP26x18x0.25	4.57	0.423	39.000	0.011	0.00	0.000	39.000	0.000
L2	164.25 - 129.125 (2)	TP34.063x21.5x0.3125	245.17	11.424	39.000	0.293	0.00	0.000	39.000	0.000
L3	129.125 - 95.4583 (3)	TP41.75x32.1538x0.375	905.75	22.955	39.000	0.589	0.00	0.000	39.000	0.000
L4	95.4583 - 62.625 (4)	TP49.063x39.8058x0.375	1797.71	32.790	39.000	0.841	0.00	0.000	39.000	0.000
L5	62.625 - 30.625 (5)	TP56.125x46.9553x0.375	2772.86	38.499	39.000	0.987	0.00	0.000	39.000	0.000
L6	30.625 - 0 (6)	TP62.938x53.8467x0.375	4034.90	42.040	37.123	1.132	0.00	0.000	37.123	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	169 - 164.25 (1)	TP26x18x0.25	3.11	0.152	26.000	0.012	0.01	0.000	26.000	0.000
L2	164.25 - 129.125 (2)	TP34.063x21.5x0.3125	13.24	0.411	26.000	0.032	1.04	0.024	26.000	0.001
L3	129.125 - 95.4583 (3)	TP41.75x32.1538x0.375	25.94	0.542	26.000	0.042	2.12	0.026	26.000	0.001
L4	95.4583 - 62.625 (4)	TP49.063x39.8058x0.375	29.61	0.526	26.000	0.040	3.55	0.032	26.000	0.001
L5	62.625 - 30.625 (5)	TP56.125x46.9553x0.375	32.60	0.505	26.000	0.039	3.44	0.023	26.000	0.001
L6	30.625 - 0 (6)	TP62.938x53.8467x0.375	35.72	0.480	26.000	0.037	3.31	0.017	26.000	0.001

Pole Interaction Design Data

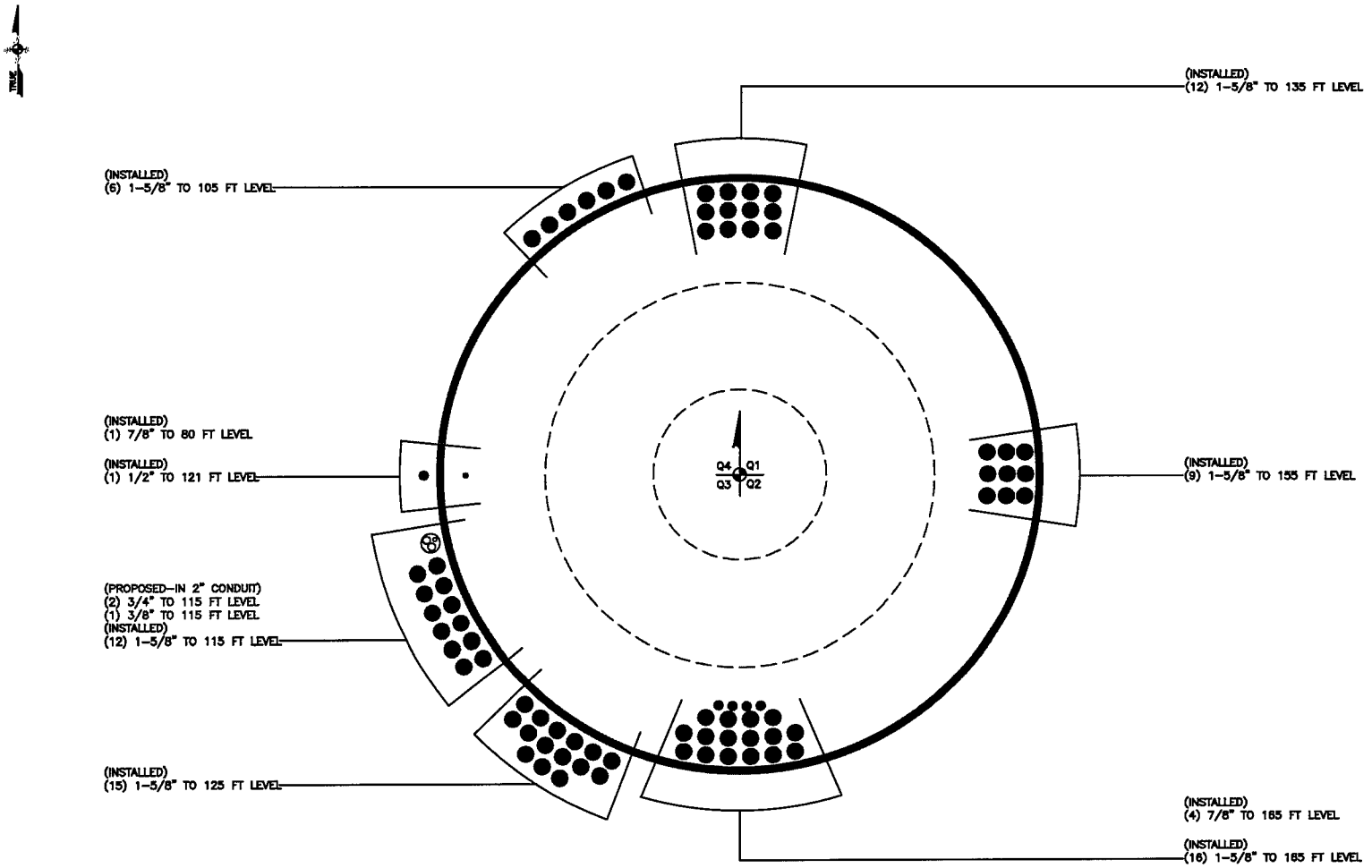
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	169 - 164.25 (1)	0.003	0.011	0.000	0.012	0.000	0.014 ✔	1.333	H1-3+VT ✔
L2	164.25 - 129.125 (2)	0.008	0.293	0.000	0.032	0.001	0.301 ✔	1.333	H1-3+VT ✔
L3	129.125 - 95.4583 (3)	0.011	0.589	0.000	0.042	0.001	0.600 ✔	1.333	H1-3+VT ✔
L4	95.4583 - 62.625 (4)	0.013	0.841	0.000	0.040	0.001	0.855 ✔	1.333	H1-3+VT ✔
L5	62.625 - 30.625 (5)	0.016	0.987	0.000	0.039	0.001	1.003 ✔	1.333	H1-3+VT ✔
L6	30.625 - 0 (6)	0.019	1.132	0.000	0.037	0.001	1.152 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	169 - 164.25	Pole	TP26x18x0.25	1	-2.17	1062.23	1.0	Pass
L2	164.25 - 129.125	Pole	TP34.063x21.5x0.3125	2	-9.42	1674.11	22.6	Pass
L3	129.125 - 95.4583	Pole	TP41.75x32.1538x0.375	3	-20.58	2486.28	45.0	Pass
L4	95.4583 - 62.625	Pole	TP49.063x39.8058x0.375	4	-29.29	2928.68	64.1	Pass
L5	62.625 - 30.625	Pole	TP56.125x46.9553x0.375	5	-39.13	3355.11	75.3	Pass
L6	30.625 - 0	Pole	TP62.938x53.8467x0.375	6	-52.13	3684.97	86.4	Pass
							Summary	
						Pole (L6)	86.4	Pass
						RATING =	**86.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 828768 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *826768*
Site Name: *PLYMOUTH / RT 6*
App #: *178763, rev 2*

Pole Manufacturer:	*Pirod*

Reactions		
Moment:	4035	ft-kips
Axial:	52	kips
Shear:	36	kips

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	45	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	68	in

Anchor Rod Results

Maximum Rod Tension:	62.1	Kips
Allowable Tension:	81.0	Kips
Anchor Rod Stress Ratio:	76.7%	**Pass**

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	72	in
Thick:	1.5	in
Grade:	50	ksi
Single-Rod B-eff:	4.44	in

Base Plate Results Flexural Check

Base Plate Stress:	Rohn/Pirod, OK
Allowable Plate Stress:	50.0 ksi
Base Plate Stress Ratio:	Rohn/Pirod, OK

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 25.75

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results N/A for Rohn / Pirod

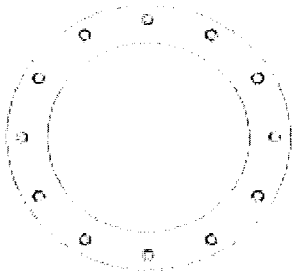
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

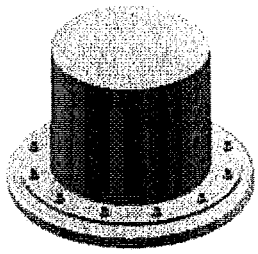
Pole Results

Pole Punching Shear Check:	N/A

Pole Data		
Diam:	62.938	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Pier and Pad Foundation

BU # : 826768
Site Name: PLYMOUTH/RT 6
App. Number: 178763 Rev. 2

TIA-222 Revision: F

Design Reactions		
Shear, **S**:	36	kips
Moment, **M**:	4035	ft-kips
Tower Height, H:	169	ft
Tower Weight, **Wt**:	52	kips
Base Diameter, **BD**:	5.24	ft

Foundation Dimensions		
Depth, **D**:	8.5	ft
Pad Width, **W**:	27	ft
Neglected Depth, **N**:	3.5	ft
Thickness, **T**:	2.50	ft
Pier Diameter, **Pd**:	7.50	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.135	kcf
Ult. Bearing Capacity, Bc:	12.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.250	ksf
Base Friction, **μ**:	0.60	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	9	
Pier Rebar Quanity, **mp**:	39	32
Pad Rebar Size, **Spad**:	9	
Pad Rebar Quanity, **mpad**:	36	14
Pier Tie Size, **St**:	4	3
Tie Quanity, **mt**:	11	7

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7.5	7.245	**OK**
Overturning (ft-kips)	8202.98	4035.00	**49.2%**
Shear Capacity (kips)	334.73	36.00	**10.8%**
Bearing (ksf)	9.00	2.90	**32.2%**
Pad Shear - 1-way (kips)	812.57	648.82	**79.8%**
Pad Shear - 2-way (kips)	1834.78	145.13	**7.9%**
Pad Moment Capacity (k-ft)	4123.81	1802.16	**43.7%**
Pier Moment Capacity (k-ft)	5324.93	4269.00	**80.2%**

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Calculated Radio Frequency Emissions

at&t

CT1086

(Plymouth Town Hill Road)

171 Town Hill Road, Terryville, CT 06786

(a.k.a. Plymouth – 171 Town Hill Road)

April 25, 2013

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 171 Town Hill Road in Terryville, CT. The coordinates of the tower are 41° 40' 6.19" N, 73° 1' 11.59" W.

AT&T is proposing the following modifications:

1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular	*115*	*880*	*6*	*296*	*0.0483*	*0.5867*	*8.23%*
Cingular	*115*	*1930*	*3*	*427*	*0.0348*	*1.0000*	*3.48%*
Sprint	155	1962.5	11	492.18	0.0810	1.0000	8.10%
Pocket (now MetroPCS)	105	2130	3	631	0.0617	1.0000	6.17%
T-Mobile	165	1935	8	95	0.0100	1.0000	1.00%
Town	178	147.32	1	500	0.0057	0.2000	2.84%
Town	178	224.78	1	500	0.0057	0.2000	2.84%
Town	178	50.39	1	500	0.0057	0.2000	2.84%
Town	80	425	1	500	0.0281	0.2833	9.91%
Town	178	442.3	1	500	0.0057	0.2949	1.92%
Verizon PCS	135	1970	11	249	0.0540	1.0000	5.40%
Verizon cellular	135	869	9	256	0.0455	0.5793	7.85%
Verizon AWS	135	2145	1	668	0.0132	1.0000	1.32%
Verizon LTE	135	698	1	839	0.0166	0.4653	3.56%
Nextel	125	851	12	100	0.0276	0.5673	4.87%
AT&T UMTS	115	880	2	565	0.0031	0.5867	0.52%
AT&T UMTS	115	1900	2	875	0.0048	1.0000	0.48%
AT&T LTE	115	734	1	1313	0.0036	0.4893	0.73%
AT&T GSM	115	880	1	283	0.0008	0.5867	0.13%
AT&T GSM	115	1900	4	525	0.0057	1.0000	0.57%
						Total	**61.05%**

Table 1: Carrier Information[1] [2] [3]

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 1/14/2013. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Antenna height listed for AT&T is in reference to the Crown Castle Structural Analysis dated April 12, 2013.

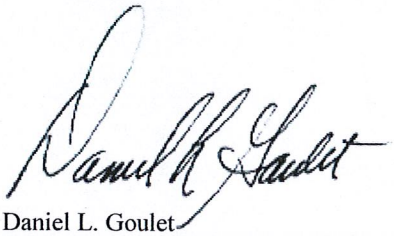
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **61.05% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

April 25, 2013
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

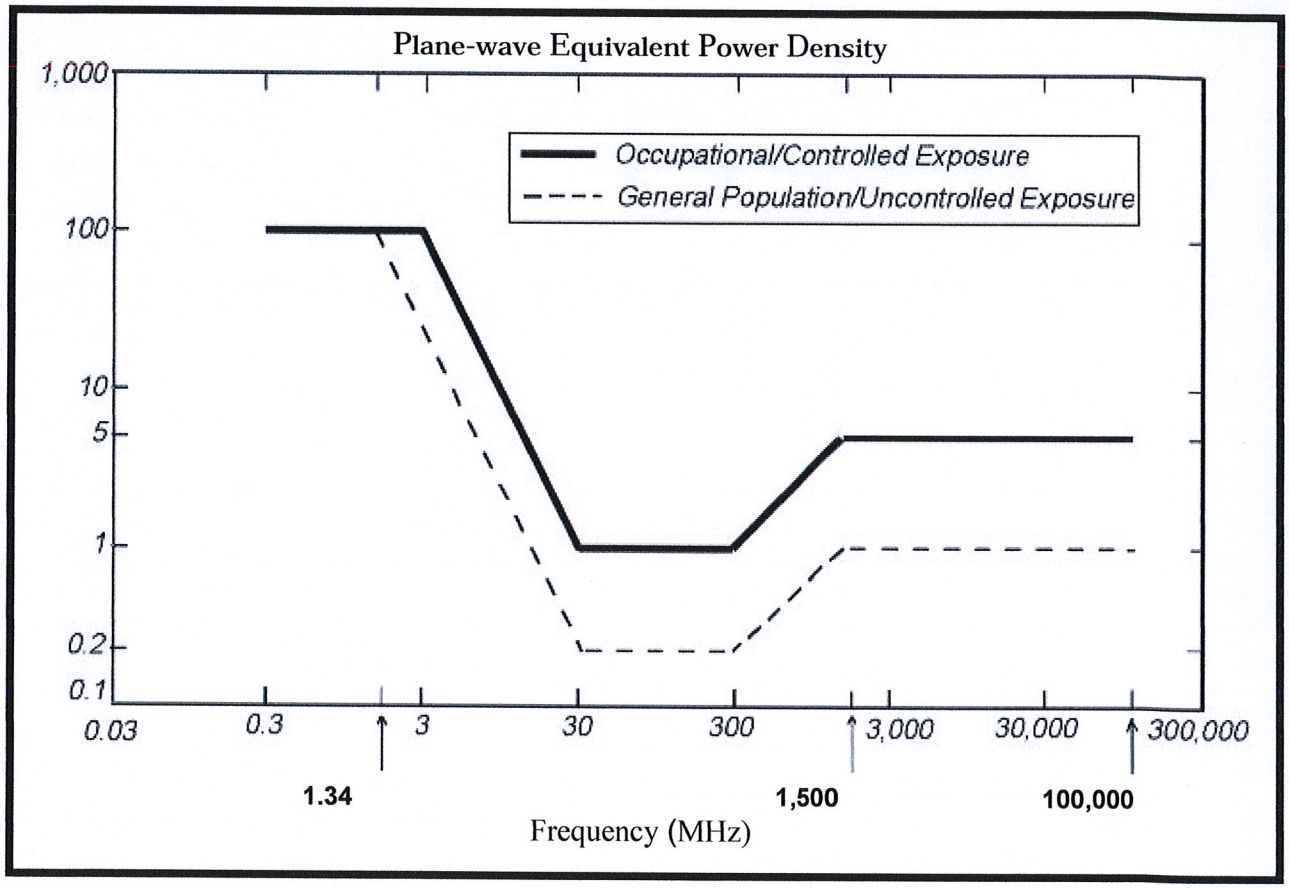
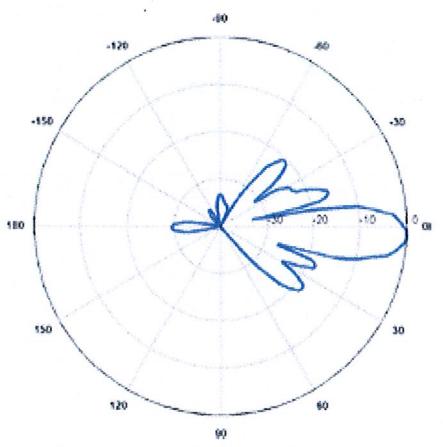


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

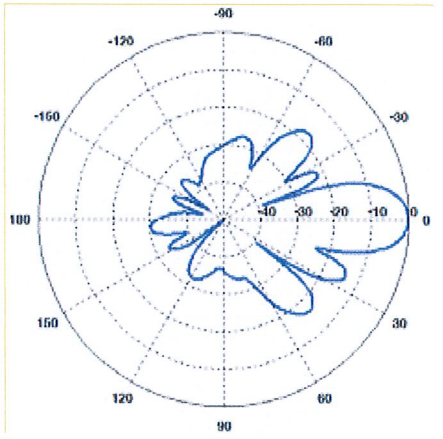
700 MHz

Manufacturer:	KMW
Model #:	AM-X-CD-16-65-00T-RET
Frequency Band:	698-806 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	12.3°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	72.0" x 11.8" x 5.9"



850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"